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ANNEXES

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Claims

1. A method for providing quasi-continuous transmission of a temporally variable parameter to initiate an operationally related function in a control and data transmission system, comprising the following steps:
  - transmission of at least one information element (S, Y) at discrete time intervals via a transmission medium (2) to the receiver device (3), and
    - determination of the time characteristic of the parameter at least approximately in a processing device (4) connected downstream of the receiver device (3), by taking account of at least one information element, the transmitted information being a discrete value of the temporally variable parameter ( $S(t_i)$ ) and the time characteristic being determined at least approximately by taking account of at least two transmitted discrete values of the parameter.
2. The method as claimed in claim 1, characterized in that the transmitted information is a discrete value of a parameter which, in a predefined manner, in particular by means of an allocation stored in the processing device, defines the time characteristic of the parameter which initiates the operationally related function.

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3. The method as claimed in claim 1 or 2,  
characterized in that  
the determination of the time characteristic of the  
parameter comprises interpolation, for example linear  
5 installation, polynomial interpolation or spline  
interpolation.
4. The method as claimed in one of claims 1 to 3,  
10 characterized in that  
an operationally related function is initiated in  
response to the calculated time characteristic of the  
parameter.
- 15 5. The method as claimed in one of claims 1 to 4,  
characterized in that  
the determined parameter is used as an input  
parameter for a control circuit.
- 20 6. The method as claimed in one of claims 1 to 5,  
characterized in that  
the operationally related function is initiated at  
a time  $t_x$ , at which the determined parameter attains or  
exceeds a predefined limited value.
- 25 7. The method as claimed in one of claims 1 to 6,  
characterized in that  
the parameter is a measure of the position of an  
object driven to movement, and the drive is de-activated  
30 to achieve a predefined position of the object.
8. The method as claimed in one of claims 1 to 7,

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characterized in that  
a time marker is transmitted to the receiver  
simultaneously with the parameter or information.

5. The method as claimed in one of claims 1 to 8,  
characterized in that,  
in determining the time characteristic of the  
parameter, a time shift  $t_0$  occurs which essentially  
corresponds to the time delay caused by the transmission  
10 of the information via the transmission medium.

15. The method as claimed in claims 2 and 9,  
characterized in that  
the determination of the time characteristic of the  
parameter in the period between the reception of values  
comprises the cyclical performance of the following  
steps:  
20 a) formation of the difference between the last two  
received or calculated values of the parameter  
b) division of the difference calculated according  
to a) by the difference between the times at which the  
two values were received,  
25 c) addition of the time period elapsed since the  
time when the last value of the parameter to  $t_0$  was  
received,  
d) multiplication of the results obtained according  
to b) and c),  
e) addition of the last obtained value of the  
parameter to the result calculated according to d).  
30 11. The method as claimed in claims 2 and 9,  
characterized in that

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the determination of the time characteristic of the parameter in the period between the reception of values comprises the cyclical performance of the following steps:

5 a) addition of the time period which has elapsed since the last value was received to  $t_0$  to produce a time period  $t_a$

10 b) determination of the instantaneous value of the parameter from the time period  $t_a$  and the predefined allocation between the time period and the parameter.

12. A control and data transmission system to carry out a method as claimed in one of claims 1 to 11, comprising at least

15 - a control device to control  
- I/O components (1, 3) via  
- an automation bus (2),  
characterized in that

20 a processing device (4), which is set up for at least approximate determination of the time characteristic of the parameter, taking account of at least two information elements transmitted via the bus, is connected to at least one I/O component (3),

25 furthermore comprising a device (5) which performs an operationally related function in response to the time characteristic of the parameter.

13. The control and data transmission system as claimed in claim 12,

30 characterized in that

the processing device (4) comprises a logic device to carry out interpolation or regression on the basis of transmitted discrete values ( $S_0, S_1, \dots S_5$ ) of the

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parameter to determine the time characteristic of the parameter.

14. The control and data transmission system as claimed  
5 in claim 12,

characterized in that

the processing device (4) comprises a device in  
which an allocation of the information transmitted via  
the bus and a time period for the time characteristic of  
10 the parameter is stored in a hardware and/or software  
implementation.

15. The control and data transmission system as claimed  
in claims 12 to 14,

characterized in that

a sensor records the position of a driven object,  
said position being discretely transmitted via the bus,  
and the drive can be controlled in response to the  
determined time characteristic of the position.